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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/781,211	02/17/2004	Yasuhiro Sawada	1232-5285	1942
27123	7590	07/11/2008		
MORGAN & FINNEGAN, L.L.P. 3 WORLD FINANCIAL CENTER NEW YORK, NY 10281-2101			EXAMINER DESIRE, GREGORY M	
			ART UNIT 2624	PAPER NUMBER
			NOTIFICATION DATE 07/11/2008	DELIVERY MODE ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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<b>Office Action Summary</b>	<b>Application No.</b> 10/781,211	<b>Applicant(s)</b> SAWADA, YASUHIRO	
	<b>Examiner</b> Gregory M. Desire	<b>Art Unit</b> 2624	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 3/26/08.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1, 12-25, 35-50 and 60-66 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1, 12-25, 35-50 and 60-66 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 17 February 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Response to Amendment***

1. The examiner acknowledges cancelled claims 2-10, 26-34 and 51-59.

### ***Response to Arguments***

2. Applicant's arguments, see remarks pages 14-16, filed 3/26/08, with respect to the rejection(s) of claim(s) 1, 25 and 50 under 35 USC 102 have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Cabral and Modegi et al.

### ***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 11-12, 14, 22-25, 35-36, 38 46-50, 60-61, 63-64 and 66 rejected under 35 U.S.C. 103(a) as being unpatentable over Cabral et al in view of Modegi et al (5,566,283).

Regarding claims 1, 23, 25, 47 and 49- 50 Cabral discloses,

A first step in which first data showing at least one of a surface shape and taken images of a real existing object is acquired (note fig. 1 , block 100 and col. 8 lines 5-10 and 50-55, object surface  $p(u,v)$ ); and

A second step in which a bump map (note col. 8 lines 45-50, height field  $f(u,v)$  is bump map) for creating a three-dimensional image of the object is generated based on the first data (note col. 8 lines 62-65 examiner interprets three components  $N_x$ ,  $N_y$  and  $N_z$  as three-dimension). Cabral does not clearly disclose bump map as a component of surface reflectance. Modegi discloses bump map as a component of surface reflectance (note col. 10 lines 9-15). Cabral and Modegi are combinable because they are from the same field of endeavor. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to include a bump map as a component of surface in the system of Cabral as evidenced by Modegi. The suggestion/motivation for doing so would have been generating output at higher speed and more efficient (note col. 3 lines 20-25 and col. 4 lines 37-45). Therefore, it would have been obvious to combine Cabral and Modegi to obtain the invention as specified in claims above.

Regarding claims 11, 35 and 60 Cabral discloses,

Wherein the surface reflectance properties data includes data on constants in a reflection model function and data on normal directions constituting the bump map (note col. 9 lines 35-50).

Regarding claims 12, 36 and 61 Cabral discloses,

Wherein the surface reflectance properties data is data specifying a specific reflectance from a reflectance table which shows a series of reflectance corresponding to light source directions and image-taking directions in tangential coordinate systems, and includes data on normal directions forming the bump map (note col. 9 lines 35-50).

Regarding claims 14, 38 and 63 Cabral discloses,

Bump map is generated so that an area of each texel on the bump map becomes substantially equivalent to an area where one pixel of the image data occupies on a surface of the object (note col. 9 lines 36-50).

Regarding claims 22, 46 and 64 Cabral discloses,

Wherein the bump map having a texel number according to information on a specified resolution of the bump map is generated (note col. 14 lines 63-66).

Regarding claims 24, 48 and 66 Cabral discloses,

An image generating step in which a three-dimensional image of the object is generated by using the bump map generated (note fig. 2b, 2020), and an image output step in which the generated three-dimensional image is output (note fig. 2b, 2080).

***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 13, 15-21, 37, 39-45, and 62 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cabral et al and Modegi in view of Krishnamurthy (6,256,038).

Regarding claims 15, 17, 21, 39-41 and 45 Cabral discloses,

The bump map shows amounts of positional changes of respective texels on a texture map. Cabral and Modegi do not clearly disclose bump map be pasted on the polygon mesh. Krishnamurthy discloses bump map corresponding to polygon mesh (note col. 48 lines 40-45). Cabral and Krishnamurthy are combinable because they are from the same field of endeavor. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to include a polygon mesh in the system of Cabral as evidenced by Krishnamurthy. The suggestion/motivation for doing so would have been improved and more flexible techniques for fitting smooth surface.

Regarding claims 13, 16, 19, 37 and 43 Cabral discloses,

Acquires shape data from an object. Cabral and Modegi do not disclose a polygon mesh showing a simplified shape of the surface shape of the object is acquired, wherein in the second step, the surface reflectance properties of the object are

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estimated by using the polygon mesh acquired. Krishnamurthy discloses polygon mesh showing shape of surface data (note col. 8 lines 6-20, represented by vertices, unparameterized surface). Cabral and Krishnamurthy are combinable because they are from the same field of endeavor. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to include a polygon mesh in the system of Cabral as evidenced by Krishnamurthy. The suggestion/motivation for doing so would have been improved and more flexible techniques for fitting smooth.

Regarding claims 18, 42 and 62 Cabral discloses,

Acquires shape data from an object image. Cabral and Modegi do not disclose polygon mesh is generated based on the image data. Krishnamurthy discloses polygon mesh is generated based on the image data (note col. 19 lines 50-60). Cabral and Krishnamurthy are combinable because they are from the same field of endeavor. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to include a polygon mesh in the system of Cabral as evidenced by Krishnamurthy. The suggestion/motivation for doing so would have been improved and more flexible techniques for fitting smooth.

Regarding claims 20 and 44 Cabral discloses,

Acquires shape data from an object and forming vertices. Cabral and Modegi do not clearly disclose a polygon mesh having one of a vertex number according to

information on a specified vertex number and a polygon number according to information on a specified polygon number is generated. Krishnamurthy discloses polygon mesh having a vertex number (note col. 8 lines 15-25). Cabral and Krishnamurthy are combinable because they are from the same field of endeavor. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to include a polygon mesh in the system of Cabral as evidenced by Krishnamurthy. The suggestion/motivation for doing so would have been improved and more flexible techniques for fitting smooth surface.

Claims 23, 47 and 65 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cabral et al and Modegi in view of Aleksic et al (6,175,368).

Regarding claims 23, 47 and 65 Cabral discloses,

Wherein a bump map is generated including texel. Cabral and Modegi do not clearly disclose each texel becomes zero. Aleksic discloses bump map wherein texel becomes zero (note col. 6 lines 40-53). Cabral, Modegi and Aleksic are combinable because they are from the same field of endeavor. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to disclose texel becoming zero in the system of Cabral and Modegi as evidenced by Aleksic. The suggestion/motivation for doing so would have been improved axis information in bump map and generating lines (note col. 6 lines 39-40 and 48-50).



***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gregory M. Desire whose telephone number is (571) 272-7449. The examiner can normally be reached on M-F (6:30-3:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bhavesh Mehta can be reached on (571) 272-7453. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

G.D.  
July 7, 2008

/Gregory M. Desire/  
Acting Examiner of Art Unit 2600